



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
-----------------	-------------	----------------------	---------------------	------------------

10/024,536

12/21/2001

Mitsue Miyazaki

2382-22

2123

23117

7590

01/26/2007

NIXON & VANDERHYE, PC

901 NORTH GLEBE ROAD, 11TH FLOOR
ARLINGTON, VA 22203

EXAMINER

ROY, BAISAKHI

ART UNIT

PAPER NUMBER

3737

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
--	-----------	---------------

3 MONTHS

01/26/2007

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary

Application No.

10/024,536

Applicant(s)

MIYAZAKI, MITSUE

Examiner

Baisakhi Roy

Art Unit

3737

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 11 December 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,3,6,7,9,11,12,14-17,20 and 21 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,3,6,7,9,11,12,14-17,20 and 21 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date <u>12/11/06</u> | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION***Double Patenting***

1. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

2. Claims 1, 6, 7, 9, 11, 12, 14-17, 20, and 21 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 56-59 and 64-74 of copending Application No. 10/635,685. Although the conflicting claims are not identical, they are not patentably distinct from each other because the '685 application claims clearly anticipate the claims of current application. The claims in '685 application are directed to the application an MT pulse of duration less than 10 ms, concurrent application of gradient pulse with MT pulse, applying a gradient spoiler pulse after the MT and gradient pulse, and scanning the region to be imaged after applying the gradient spoiler pulse.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims 1, 6, 7, 9, 11, 12, 14-17, 20, and 21 are rejected under 35 U.S.C. 102(e) as being anticipated by Kassai et al. (2004/0059213). Kassai et al. disclose a magnetic resonance imaging system and method by applying an MT (magnetization transfer) pulse formed as an RF (radio frequency) pulse of a frequency which is off-resonance at a region to be imaged and a waveform based on a Sinc function and concurrently applying a gradient pulse with the MT pulse [0088-0089]. The reference further teaches applying a gradient spoiler pulse to the object after applying both the MT pulse and the gradient pulse [0090]. The method also involves performing a two- or three-dimensional scan to acquire an echo signal from the region to be imaged after applying the gradient spoiler pulse [0087, 0092] based on a multi-slice imaging technique. The reference teaches applying an MT pulse consisting of a plurality of divided MT pulses (between 5 to 10) applied sequentially in time where the duration of each MT pulse divided is as

short as approximately 1300 μ sec [0101]. Therefore the duration of the entire MT pulse would be as short as approximately 6.5 ms, meeting the pulse duration limitation being less than 10 ms. The method involves acquiring an echo signal of at least two types of nuclear pools in an object consisting of a nuclear pool of free water and a nuclear pool of a macromolecule [0056].

3. Claims 1, 6, 7, 9, 11, 12, 14-17, 20, and 21 are rejected under 35 U.S.C. 102(e) as being anticipated by Kassai et al. (2002/0188190). Kassai et al. disclose a magnetic resonance imaging system and method by applying an MT (magnetization transfer) pulse formed as an RF (radio frequency) pulse of a frequency which is off-resonance at a region to be imaged and a waveform based on a Sinc function and concurrently applying a gradient pulse with the MT pulse [0087-0088]. The reference further teaches applying a gradient spoiler pulse to the object after applying both the MT pulse and the gradient pulse [0089]. The method also involves performing a two- or three-dimensional scan to acquire an echo signal from the region to be imaged after applying the gradient spoiler pulse [0086, 0091] based on a multi-slice imaging technique. The reference teaches applying an MT pulse consisting of a plurality of divided MT pulses (between 5 to 10) applied sequentially in time where the duration of each MT pulse divided is as short as approximately 1300 μ sec [0100]. Therefore the duration of the entire MT pulse would be as short as approximately 6.5 ms, meeting the pulse duration limitation being less than 10 ms. The method involves acquiring an echo signal of at least two types of nuclear pools in an object consisting of a nuclear pool of free water and a nuclear pool of a macromolecule [0055].

The applied reference has a common inventor with the instant application.

Based upon the earlier effective U.S. filing date of the reference, it constitutes prior art under 35 U.S.C. 102(e). This rejection under 35 U.S.C. 102(e) might be overcome either by a showing under 37 CFR 1.132 that any invention disclosed but not claimed in the reference was derived from the inventor of this application and is thus not the invention "by another," or by an appropriate showing under 37 CFR 1.131.

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claims 1, 6, 7, 9, 11, 12, 14-17, 20, and 21 rejected under 35 U.S.C. 102(b) as being anticipated by Miyazaki (JP 11-313810). Miyazaki discloses a magnetic resonance imaging system and method by applying an MT (magnetization transfer) pulse formed as an RF (radio frequency) pulse of a frequency which is off-resonance at a region to be imaged and a waveform based on a Sinc function and concurrently applying a gradient pulse with the MT pulse [0027, 0048, 0057]. The reference further teaches applying a gradient spoiler pulse to the object after applying both the MT pulse and the gradient pulse [0014-0019]. The method also involves performing a two- or three-dimensional scan to acquire an echo signal from the region to be imaged after applying the gradient spoiler pulse [0026-0031] based on a multi-slice imaging technique. The reference teaches applying an MT pulse consisting of a plurality of divided MT pulses (between 5 to 10) applied sequentially in time where the duration of

Art Unit: 3737

each MT pulse divided is as short as approximately 1300 μ sec [0061]. Therefore the duration of the entire MT pulse would be as short as approximately 6.5 ms, meeting the pulse duration limitation being less than 10 ms. The method involves acquiring an echo signal of at least two types of nuclear pools in an object consisting of a nuclear pool of free water and a nuclear pool of a macromolecule [0021].

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 1, 3, 6, 7, 9, 11, 12, 14-17, 20, and 21 are rejected under 35 U.S.C.

103(a) as being unpatentable over Schneider et al. (5,339,035) in view of Miyazaki (JP 11-313810). Schneider et al. disclose a MR system and method where a magnetization transfer pulse is applied to an object of an off-resonance frequency (abstract, col. 4 lines 6-19 lines 30-36), to a region to be imaged of duration less than 10 ms, as short as 5 ms (col. 4 lines 20-30), based on a rectangular waveform with rounding of the sharp corners of the pulse to minimize excitation at resonance (col. 4 lines 30-36, fig. 5), which is equivalent to the application of a Gaussian function since the pulse sequence of the reference has a duration as short as 5 milliseconds and therefore meets the requirement of applying an RF pulse as the MT pulse whose duration is less than 10 ms, applying a spoiler pulse to the object after applying the MT pulse (col. 9 lines 1-10),

Art Unit: 3737

and fully capable of performing a scan in two and three dimensions (col. 5 lines 44-68, col. 6 lines 1-2, col. 8 lines 40-46). The reference further teaches applying a gradient pulse to select an applied position of the MT pulse to the object so that the applied position of the MT pulse is different from the region to be imaged (col. 8 lines 59-68), and decoupling the coupling relation between the nuclear pool of free water and macromolecule (col. 10 lines 3-26). Schneider et al. do not explicitly teach the concurrent application of MT and gradient pulse. In the same field of endeavor Miyazaki (JP '810) teaches the application of an MT pulse where the duration of each RF pulse is short and where the gradient magnetic field pulse is applied concurrently with the RF pulse (abstract). It would have been obvious to one of ordinary skill in the art to use the teaching by Miyazaki to modify the teaching by Schneider et al. for the purpose of selecting the slice region.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Baisakhi Roy whose telephone number is 571-272-7139. The examiner can normally be reached on M-F (7:30 a.m. - 4p.m.).

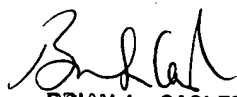
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Brian L. Casler can be reached on 571-272-4956. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 3737

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

BR

BR


BRIAN L. CASLER
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 3700